In the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1.(Currently amended) An electrochemical plating electrolyte solution, comprising:

an electrolyte bath solution; and

a polymer additive provided in said electrolyte bath solution, said polymer additive comprising polymers having a chemical formula of $CH_3(CH_2CHX)_m(CH_2CHYCH_2)_n\ CH_3$, where X is an aromatic functional group; Y is an aromatic amine functional group; and m and n are integers indicating numbers of ~~said~~ an aromatic monomer and ~~said~~ an aromatic amine monomer, respectively, in said each of said polymers.

2. (Currently amended) The electrochemical plating electrolyte solution of claim 1 wherein said aromatic monomer comprises [[a]] said aromatic functional group selected from the group consisting of benzene and pyrrolidone.

3. (Currently amended) The electrochemical plating electrolyte solution of claim 1 wherein said aromatic amine monomer comprises [[a]] said aromatic amine functional group selected from the group consisting of imidazole and an imidazole derivative.

4. (Currently amended) The electrochemical plating electrolyte solution of claim 3 wherein said aromatic monomer comprises [[a]] said aromatic functional group selected from the group consisting of benzene and pyrrolidone.

5. (cancelled)

6. (Previously presented) The electrochemical plating electrolyte solution of claim 1 wherein said aromatic functional group comprises a functional group selected from the group consisting of benzene and pyrrolidone.

7. (Previously presented) The electrochemical plating electrolyte solution of claim 1 wherein said aromatic amine functional group comprises a functional group selected from the group consisting of imidazole and an imidazole derivative.

8. (Previously presented) The electrochemical plating electrolyte solution of claim 7 wherein said aromatic functional group comprises a functional group selected from the group consisting of benzene and pyrrolidone.

9. (Currently amended) An electrochemical plating electrolyte solution, comprising:

an electrolyte bath solution; and

a polymer additive provided in said electrolyte bath solution, said polymer additive comprising polymers having a chemical formula of

$CH_3(CH_2CHX)_m(CH_2CHYCH_2)_n\ CH_3$, where X is an aromatic functional group; Y is an aromatic amine functional group; and m and n are integers indicating numbers of ~~said~~ an aromatic monomer and ~~said~~ an aromatic amine monomer, respectively, in said each of said polymers; and

a cationic charge density of from about 1 meq/g to about 6 meq/g.

10. (Currently amended) The electrochemical plating electrolyte solution of claim 9 wherein said aromatic monomer comprises [[a]] said aromatic functional group selected from the group consisting of benzene and ~~pyrollidone~~ pyrrolidone.

11. (Currently amended) The electrochemical plating electrolyte solution of claim 9 wherein said aromatic amine monomer comprises [[a]] said aromatic amine functional group selected from the group consisting of imidazole and an imidazole derivative.

12. (Cancelled)

13. (Original) The electrochemical plating electrolyte solution of claim 9 wherein each of said polymers has a molecular weight of from about 2,000 to about 400,000.

14. (Currently amended) The electroplating electrolyte solution of claim 13 wherein said aromatic monomer comprises [[a]] said aromatic functional group selected from the group consisting of benzene and ~~pyrollidone~~ pyrrolidone.

15. (Currently amended) The electroplating electrolyte solution of claim 13 wherein said aromatic amine monomer comprises [[a]] said aromatic amine functional group selected from the group consisting of imidazole and an imidazole derivative.

16. (Cancelled)

17. (Currently amended) A method of electroplating a metal on an electroplating surface, comprising the steps of:

providing an electrolyte bath solution;

mixing a polymer additive with said electrolyte bath solution, said polymer additive comprising polymers having a chemical formula of $CH_3(CH_2CHX)_m(CH_2CHYCH_2)_n\ CH_3$, where X is an aromatic functional group; Y is an aromatic amine functional group; and m and n are integers indicating numbers of ~~said~~ an aromatic monomer and ~~said~~ an aromatic amine monomer, respectively, in said each of said polymers;

immersing said electroplating surface in said electrolyte bath solution; and

electroplating said metal onto said electroplating surface.

18. (Currently amended) The method of claim 17 wherein said aromatic monomer comprises [[a]] said aromatic functional group selected from the group consisting of benzene and ~~pyrollidone~~ pyrrolidone and said aromatic amine monomer comprises [[a]] said aromatic amine functional group selected from the group consisting of imidazole and an imidazole derivative.

19. (Cancelled)

20. (Original) The method of claim 17 wherein each of said polymers has a molecular weight of from about 2,000 to about 400,000 and a cationic charge density of from about 1 meq/g to about 6 meq/g.